

PTO 08-1299

CC= SU  
DATE=19811207  
KIND= USSR PATENT DESCRIPTION  
PN= 887434

**A GANTRY CRANE**

[KOZLOVOY KRAN]

P. P. FEDORENKO et al.

UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, D.C. DECEMBER 2007  
TRANSLATED BY SCHREIBER TRANSLATIONS, INC.

PUBLICATION COUNTRY	(10):	SU
DOCUMENT NUMBER	(11):	887434
DOCUMENT KIND	(12):	[N/A]
PUBLICATION DATE	(43):	19811207
APPLICATION NUMBER	(21):	2839486/29-11
APPLICATION DATE	(22):	19791116
INTERNATIONAL CLASSIFICATION	(51):	B 66 C 19/00
PRIORITY COUNTRY	(33):	[N/A]
PRIORITY NUMBER	(31):	[N/A]
PRIORITY DATE	(32):	[N/A]
INVENTOR(S)	(72):	P. P. Fedorenko, O. B. Belostotsky, and M. G. Stadnik
APPLICANT(S)	(71):	Scientific Research Institute of Construction Facilities (under jurisdiction of State Construction Agency), Soviet Republic of Ukraine (Kiev)
DESIGNATED CONTRACTING STATES	(81):	[N/A]
TITLE	(54):	A Gantry Crane
FOREIGN TITLE	[54A]:	Kozlovoy kran

## A GANTRY CRANE

This invention pertains to lifting/handling and erecting mechanisms which are applied in the construction of industrial buildings and structures, specifically, to gantry cranes.

There is a known gantry crane which includes a crossbar and load lifting mechanisms. This crossbar is pivoted at one end to a support leg; further, at the opposite end the crossbar is mounted rigidly to another support leg, and the legs are installed on traction trolleys [1].

The disadvantages of the known crane include its small service area and narrow range of applications.

The purpose of this invention is to extend the crane's service area and widen the range of its applications.

To do this, as per our invention the crossbar is arranged at an angle 35° to 60° with the longitudinal axis of crane track in the horizontal plane.

What is more, the crane is furnished with a vertical strut which is mounted on a traction trolley of a support leg; the leg is hinged

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<sup>1</sup> Numbers in the margin indicate pagination in the foreign text.

to the crossbar; further, the leg is pivotally connected to the crossbar through bracings.

Our Fig. 1 is a sketch diagram of the invented crane; Fig. 2 illustrates the application of invented gantry crane for the erection of block roofing of an industrial building.

The gantry crane includes a crossbar (1) with load trolleys (2), a pivot support leg (3), and a rigidly mounted support leg (4); the legs are mounted on traction trolleys (5). The crane's crossbar is arranged at an angle  $35^{\circ}$  to  $60^{\circ}$  with the longitudinal axis of crane track in the horizontal plane. The crane also

includes an additional vertical strut (6) which at its lower end is connected rigidly to the pivot support leg (3) through a bracing (7); further, at its upper end the vertical strut (6) through a bracing (8) is also pivotally connected to the pivot support leg (3) and also through a bracing (9) to the rigid support leg (4) of the crane.

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When handling and erecting equipment and structures, including construction block roofing of industrial buildings, the rigidly fixed support leg (4) of the crane will move along the track (10) within the erection spacing; further, the pivot support leg (3) and additional vertical strut (6) will move along the track (11) which is arranged beyond the erection spacing.

The efficiency of the invention lies in the opportunity to apply these cost effective gantry cranes of high load-carrying capacity for handling and erecting equipment, structures, and roofing blocks of industrial buildings and facilities. Moreover, with the invented crane it is possible to avoid the application of additional cranes for roofing within the "dead" construction areas, and also eliminate the necessity in construction operators for handling and positioning of construction blocks within erection spacings; it is possible also to apply the invented crane for the installation of heavy equipment within construction spacings prior to the installation of roofing blocks.

Thus with our invention it is possible to reduce the costs of construction of industrial buildings, including the cost of construction block roofing.

When the gantry crane carrying a roofing block is moving within an erection spacing or getting transferred to a consecutive building spacing along a service crane track, its stability will be secured by a rigid 'disk', which is formed by the crossbar and two bracings at the top. Further, for the purpose of greater stability the lower bracing is connected rigidly to the pivot support leg and additional vertical strut thus forming a bracing frame in vertical plane.

## THE CLAIM

1. A gantry crane which includes a crossbar with load lifting mechanisms. The crossbar is pivoted at one end to a support leg; at the opposite end the crossbar is mounted rigidly to another support leg; the legs are installed on traction trolleys. The gantry crane distinctive in that to extend the crane's service area and widen the range of its applications, its crossbar is arranged at an angle  $35^{\circ}$  to  $60^{\circ}$  with the longitudinal axis of crane track in the horizontal plane.

2. The gantry crane as per Claim 1 above distinctive in that for the purpose of its greater stability it is furnished with a vertical strut which is mounted on a traction trolley of a support leg; the leg is hinged to the crossbar; further, the leg is pivotally connected to the crossbar through bracings.

## REFERENCES/PROTOTYPES

1. Abramovich I. I. and Kotelnikov G. A. Kozlovie krany obshchego naznacheniya (General purpose gantry cranes). Mashinostroenie Publishers, Moscow, 1971, p. 11, Fig. 5-a (prototype)

Fig. 1

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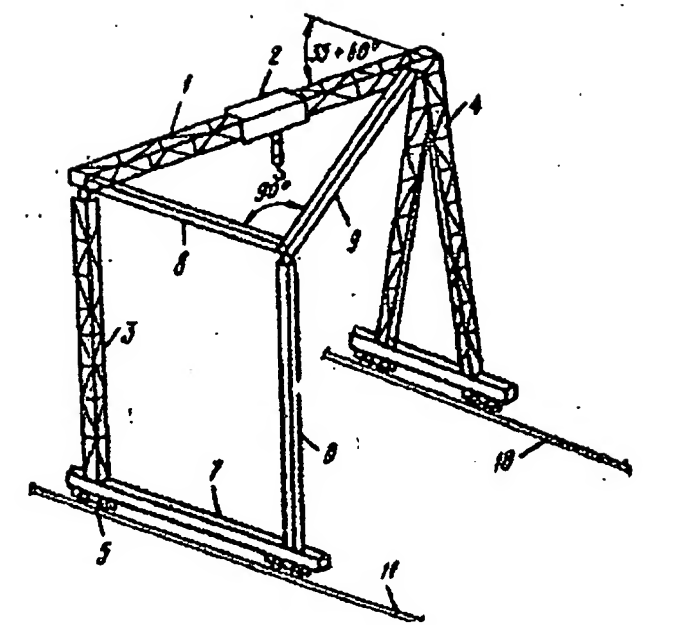


Fig. 2

